DIRECTION OF TRADE ANALYSIS OF INDIAN GRAPES

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ABSTRACT

The paper attempts to quantify the changing structure of Indian grapes exports. Data for analysis was taken for a period of 10 years from 2005-06 to 2014-15. The major Indian grape export markets were categorized as stable markets (Bangladesh, others, U.K, Netherlands) and unstable markets (UAE, Russia,) based on the magnitude of transition probabilities. The major export markets for Indian grapes are Bangladesh (62.34 %), others (54.17 %) UK (50.88 %), Netherlands (25.61 %). India can concentrate on export promotion in these countries to tap the import potential for Indian grapes and international trade fairs, exhibitions etc.

KEYWORDS: Compound Growth Rate, Direction of Trade, Markov Chain, Structural Change

INTRODUCTION

India is the fruit and vegetable basket of the world. It is the home of wide variety of fruit and vegetables and holds a unique position in production. India is the largest producer of fruits in the world with an annual production of 81.28 million tonnes from an area of 69.82 million hectares and contributes more than 12.6 per cent to the world fruit production. Mango, grapes and banana are the major export earning commodities. Grapes is the fruit of Asia and has developed its own importance all over the world. Being a useful and delicious fruit.

Grapes contributing 1.60 per cent to total fruit area and 2.90 per cent to total fruit production. It is grown over an area of 1.18 million ha with a production of 2.58 million tonnes in the country. Therefore, an attempt was made to quantify the changing structure of Indian grape exports. The main objective of the paper was to study the direction of export and structural change in grape exports.

METHODOLOGY

The Data on area, production, productivity and exports of grapes of India collected from APEDA during 2005-06 to 2015-16. Compound Growth rates were calculated to know growth in area, production, productivity and exports of grapes from India.

$$Y_t = ab^t u^t \qquad (1)$$

Where,

Y_t = area/production/productivity/exports in the years 't'

a = intercept indicating Y in the base period (t=0)

b = Regression coefficient

t = Time period in years

u_t = Disturbance term for the year 't'

The Direction of trade was examined by Markov chain model. The Major Grape importing countries were Netherlands, UK, UAE, Bangladesh and Russia and all others countries grouped under others. The estimation of the transitional probability matrix P is Central to Markov chain analysis. The elements P_{ij} of the matrix P indicates the probability that export will switch from country i to country j with the passage time. The diagonal elements of the matrix measures the probability that the export share of a country will be retained. By examining the diagonal elements shows the loyalty to particular countries exports.

The first order finite Markov chain model, the random nature of the process, that the outcome of present period is affected by the previous period's outcome and the constant condition. The model can be presented algebraically as follows:

$$E_{jt} = \sum_{i=1}^{r} E_{it-1} \cdot P_{ij} + e_{jt}$$

(2)

Where

E_{jt} = export of grapes to the jth country during the year t

E_{jt-1} = export to jth country during the year t-1

P_{ij} = probability that exports will shift from the ith country to j^{th} country

e_{jt} = Error term which is independent of e_{jt-1}

r = Number of importing countries.

The estimated share of importing country during a period t was obtained by multiplying the value of import during the previous period (t-1) with the estimated transitional probability matrix. Estimation of the transitional probabilities of the Markov Chain model is through Minimum Absolute Deviations (MAD) procedure which minimizes the sum of absolute deviations. The conventional linear programming technique was used as this satisfies the properties of transitional probabilities of non-negativity restrictions and row sum constraints in estimation.

The linear formulation: Min O P*+I e

Subject to

XP*+V = Y

GP* = 1

P* >= 0

Where,

0 is the vector of zeroes

P is the vector of probabilities, P

I is an appropriately demonstrated identity matrix

e is a vector of absolute errors

Y is the vector of exports of each country

X is the block diagonal matrix of lagged values of Y

V is the vector of errors

G is the grouping matrix to add row elements of P arranged in P* to unity

RESULTS AND DISCUSSIONS

Compound annual growth rates of export of fresh grapes from India (2005-06 to 2014-15) presented in Table 1. The results revealed that both area (8.69 %) and production (4.00 %) exhibits positive growth, while productivity (-4.31%) of Grapes found to be negatively growing. This negative growth in productivity of Grapes may be due to poor management practices by the producers. The study also depicted the growth in export quantity and value of export where in growth of value of export was increasing at 25.57 per cent per annum and quantity of export was increasing at 11.67 per cent per annum. Compared to production, export of Grapes was growing at a positive and significant growth. Growth in value of export was found to be very high indicating good potential and higher profit for Indian Grapes. These results are in line with findings of Kusuma (2014).

Production has increased from 1564700.00 metric tonne in 2005-06 to 2483000.00metric tonne with a growth rate of 4.00 per cent per annum. Quantity of Grapes exported from India has been increased from 54049.86metric tonne to 142357.60 metric tonne with a growth rate of 11.67 per cent per annum. But the share of export out of the total quantity of Grapes produced is very less; this is ranging only 0.30 per cent to 0.70 per cent. Though India is the Major producer of Grapes in the world, the quantity exported is less than one per cent during the study period.

Table 1: Compound Growth Rates of Export of Fresh
Grapes from India (2005-06 to 2014 -15)

Particulars	CAGR (%)
Area	8.69
Production	4.00
Productivity	-4.31
Quantity Export	11.67
Value of Export	25.57

Table 2: Destination -Wise Growth Rates in Export of Fresh
Grapes from India during 2005-06 to 2014-15

Destination	Quantity	Value
Netherlands	11.83	23.14
U.K.	3.12	14.83
U.A.E.	9.12	19.51
Bangladesh	-7.50	13.32
Russia	29.71	41.74
Other Countries	23.75	40.87
Total	**11.67**	**25.57**

Destination wise growth rates in export of fresh grapes from India during 2005-06to 2014-15 have been presented in Table 2. Export of grapes to Russia recorded a significant and positive growth rate of 29.71 per cent and41.74 per cent in terms of quantum and value of export, followed by others and Netherlands. Bangladesh recorded a negative growth rate

of -7.50 per cent in quantum of export. UAE, UK, exports were having moderate positive growth. These results are in line with findings of Prakash Mokashi (2012).

Transitional Probability matrix of Indian Grape exports (2005-06 to2014-15) presented in Table 3. It is evident from Table 3, that Bangladesh was the most stable market among the major importers of Indian grapes as reflected by the probability of retention at 62.34 per cent. The most unstable markets among the importing countries were UAE and Russia with the zero per cent retention and Netherlands with 25.61per cent retention. Others retained 54.17 per cent and UK with 50.88 per cent of total export from India. These results are in line with findings Pramod Kumar *et al.* (2007) and Yeledhalli *et al. (*2012.)

Table 3: Transitional Probability Matrix of Indian Grapes Exports (2005-06 to 2014-15)

	Netherlands	U.K.	U.A.E.	Bangladesh	Russia	Others
Netherlands	**0.2561**	0.0000	0.1684	0.5755	0.0000	0.0000
U.K.	0.3289	**0.5088**	0.0703	0.0920	0.0000	0.0000
U.A.E.	0.1817	0.3904	**0.0000**	0.0000	0.0145	0.4135
Bangladesh	0.1077	0.0060	0.1099	**0.6234**	0.0000	0.1531
Russia	1.0000	0.0000	0.0000	0.0000	**0.0000**	0.0000
Others	0.0768	0.0000	0.0959	0.0000	0.2856	**0.5417**

CONCLUSIONS

India should not have high dependency on one market so as to avoid trade risks in the long-run. Therefore, appropriate export promotion strategies have to be envisaged to diversify the geographical concentration of Grapes exports and minimize market risks.

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